Perspectives on Thinking, Judging, and Decision Making
Wibecke Brun, Gideon Keren, 
Geir Kirkebøen, Henry Montgomery (eds.)

Perspectives on Thinking, 
Judging, and Decision Making

A tribute to Karl Halvor Teigen

UNIVERSITETSFORLAGET
© Universitetsforlaget 2011


All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical or photocopying, recording, or otherwise, without the prior permission of Universitetsforlaget. Enquiries should be sent to the Rights Department, Universitetsforlaget, Oslo, at the address below.

www.universitetsforlaget.no

This book is published with economic support from the Faculty of Psychology at the University of Bergen and the Departments of Psychology at the University of Oslo, the University of Tromsø, and the Norwegian University of Science and Technology in Trondheim.

Universitetsforlaget AS
P.O. Box 508 Sentrum
NO-0105 Oslo
Norway

Cover Design: Nina Lykke
Design: Rusanes Bokproduksjon AS
Typeset: Minion Pro 10,7/14
Printed: AIT Otta AS
# TABLE OF CONTENTS

Contributors ................................................................. 9

Introduction ........................................................................ 11
*Gideon Keren, Wibecke Brun, Geir Kirkebøen and Henry Montgomery*

Chapter 1
Distinguishing Two Dimensions of Uncertainty ...................... 21
*Craig R. Fox and Gülden Ülkümen*

Chapter 2
On Two Complementary Approaches to the Study of
Verbal Probabilities ...................................................... 36
*David V. Budescu and Thomas S. Wallsten*

Chapter 3
Overconfidence in the Accuracy of Work Effort Predictions:
The Role of Interval Width ................................................ 47
*Magne Jørgensen*

Chapter 4
Confidence-Frequency Discrepancy in Judgments ................... 57
*Dan Zakay and Dida Fleisig*

Chapter 5
Knowing about One's Own Ignorance:
Difficulties, Levels and Possible Effects ............................. 66
*Carl Martin Allwood*

Chapter 6
The Bomb Party Probability Illusion ................................... 76
*Peter Ayton*
# Table of Contents

Chapter 7  
**Luck, Immanent Justice, and Coincidences.** ......................... 88  
*Jonathan Baron*

Chapter 8  
**Anchoring and Adjustment: A Bayesian Heuristic?** ............... 98  
*Nigel Harvey*

Chapter 9  
**Rethinking the Role of Intuition in the Conjunction Fallacy.** .... 109  
*Gaëlle Villejoubert*

Chapter 10  
**The Time Saving Bias and Related Human Judgmental Shortcomings.** 120  
*Ola Svenson*

Chapter 11  
**Approximating Accuracy in Judgment: Simple Heuristics and the Importance of “Kind” Environments.** 133  
*Robin M. Hogarth*

Chapter 12  
**Heuristics and Biases Making People Rich or Poor – A Psychological Account of Stock Market Anomalies.** 146  
*Tommy Gärling*

Chapter 13  
**Evaluations of Factual and Counterfactual Outcomes: Judgments vs. Valence Estimates.** 157  
*Frode Svartdal and Jens Andreas Terum*

Chapter 14  
**Cognitive Errors and the Narrative Nature of Epistemic Thought.** 166  
*Lee Roy Beach*

Chapter 15  
**Risky Decision Making with Mental Causal Models.** ............... 179  
*Oswald Huber*
Chapter 16
Different Types of Rational-Intuitive Conflict ......................... 190
Thomas Gilovich

Chapter 17
Language and Meaning Representation: Implications for Theories of Reasoning and Decision Making ......................... 201
Denis Hilton, Christophe Schmeltzer and Bart Geurts

Chapter 18
The Nature of Invariance Underlying Framing Effects ................. 212
Gideon Keren

Chapter 19
Location, Location, Location: Position Effects in Choice among Simultaneously Presented Options ................ 223
Maya Bar-Hillel

Chapter 20
Life and (Partial) Death: How Psychological Connectedness Guides Preferences ................................. 236
Henry Montgomery, Per H. Hedberg and William Montgomery

Chapter 21
On the Discovery of the Adoptive Unconscious: Descartes behind Wilson's Caricature ........................................ 249
Geir Kirkebøen

Chapter 22
Historical Ethnic Bias in Collective Memory of Places: Cognitive or Motivational? ........................................ 262
Maria Lewicka

Chapter 23
Emotions and Behavioral Decision Making: How Feeling Is for Doing ........................................ 274
Marcel Zeelenberg

Name index ......................................................... 285
CONTRIBUTORS

Professor Carl Martin Allwood
University of Gothenburg
cma@psy.gu.se

Professor Peter Ayton
City University London
P.Ayton@city.ac.uk

Professor Maya Bar-Hillel
The Hebrew University of Jerusalem
maya@huji.ac.il

Professor Jonathan Baron
University of Pennsylvania
baron@psych.upenn.edu

Professor Emeritus Lee Roy Beach
University of Arizona
leerbeach@aol.com

Professor Craig R. Fox
University of California, Los Angeles
craig.fox@anderson.ucla.edu

Professor Emeritus Tommy Gärling
University of Gothenburg
tommy.garling@psy.gu.se

Professor Bart Geurts
Radboud University Nijmegen
brtgrts@gmail.com

Professor Thomas Gilovich
Cornell University
tdg1@cornell.edu

Professor Nigel Harvey
University College London
n.harvey@ucl.ac.uk

Assistant Professor Per H. Hedberg
Stockholm School of Economics
Per.Hedberg@hhs.se

Professor Denis Hilton
University of Toulouse
hilton@univ-tlse2.fr

Professor Robin M. Hogarth
ICREA and Universitat Pompeu Fabra,
Barcelona
robin.hogarth@upf.edu
Professor Oswald Huber  
University of Fribourg  
oswald.huber@unifr.ch

Professor Magne Jørgensen  
Simula Research Laboratory, Oslo  
magnej@simula.no

Professor Gideon Keren  
Tilburg University  
G.Keren@uvt.nl

Professor Geir Kirkebøen  
University of Oslo  
geir.kirkeboen@psykologi.uio.no

Professor Maria Lewicka  
University of Warsaw  
marlew@psych.uw.edu.pl

Professor Emeritus  
Henry Montgomery  
Stockholm University  
hmy@psychology.su.se

Researcher William Montgomery  
Stockholm University  
william.montgomery@psy.gu.se

Post Doctorate Christophe Schmeltzer  
University of Toulouse  
c.schmeltzer@free.fr

Professor Frode Svartdal  
University of Tromsø  
frodes@psyk.uit.no

Senior Researcher/Professor Emeritus  
Ola Svenson  
Decision Research (Oregon) &  
Stockholm University  
osen@psychology.su.se

Ph.D.-Student Jens Andreas Terum  
University of Tromsø  
jens.a.terum@uit.no

Assistant Professor Gülden Ülkümen  
USC Marshall School of Business,  
Los Angeles  
ulkumen@marshall.usc.edu

Senior Lecturer Gaëlle Villejoubert:  
Kingston University, London  
G.Villejoubert@kingston.ac.uk

Professor Thomas S. Wallsten  
University of Maryland  
tswallst@umd.edu

Professor Dan Zakay  
The Interdisciplinary Center, Herzliya  
dzakay@post.tau.ac.il

Professor Marcel Zeelenberg  
Tilburg University  
Marcel@uvt.nl
INTRODUCTION

It is our pleasure and honor to be the editors of this special volume, dedicated to Karl Halvor Teigen on his 70th birthday. We were lucky (for the meaning of luck see Teigen, 1999, and Teigen & Jensen, 2011) in two respects. First, each of the editors (in his/her way) has a close bond with Karl Halvor which is spread over a long period, and editing this book gave us the opportunity to express our respect and appreciation to a unique scholar. Second, we were fortunate enough to get an outstanding list of contributors (reflecting the esteem that Karl Halvor enjoys among his colleagues all over the world) and in the process of editing this volume had the opportunity to learn unknown facts and discover new perspectives.

The present book examines different issues in the domain of what is referred to as Behavioral Decision Making. It is a relatively young field that has existed approximately half a century. Its starting point can be traced to Ward Edwards’ seminal paper labeled “The theory of decision making” which appeared in Psychological Bulletin in 1954. Karl Halvor was at that time approaching the age of 13 and perhaps already at that stage had developed his first ideas regarding the broader field of judgment and decision making. For sure, since then he has made a large number of contributions in different domains of this fast growing field.

His initial entrance into the field consisted of four articles (all appearing in the Scandinavian Journal of Psychology, 1983) which investigated different facets of subjective probability judgments. In the first article he showed that when predicting the outcomes of random events, people tend to select central values and avoid extremes, anticipating a similar pattern in choice behavior (Christenfeld, 1995). The second article demonstrated that point predictions and interval predictions of the same events do not necessarily yield the same results, foreseeing later work on point vs. interval estimates (Teigen & Jørgensen, 2005; Teigen, Halberg, & Fostervold, 2007). The third article demonstrated that probability judgments of events (n>2) that are exhaustive tend to be sub-additive. The last article showed that probabilities are treated differently from other dimensions related to uncertainty such as confidence and luck, two concepts that Karl Halvor further studied in subsequent research.

Two major themes already appear in these early papers which would serve as the underlying thread for much of Karl Halvor’s research in the years to come.
One concerns his interest in the question of how people understand and represent uncertainty. How do they interpret probabilities as assessments of uncertainty? What is their view of randomness and to what extent does it deviate from the formal definitions of randomness? The second theme concerns the role of pragmatics and the manner in which context effects meaning. In particular, he tried to understand the pragmatics of articulating uncertainty – hence his well-known work (in collaboration with Wibecke Brun) on verbal probabilities which is further discussed in chapter 2 by Budescu and Wallsten as well as in chapter 17 by Denis Hilton, Christophe Schmeltzer, and Bart Geurts.

We invited researchers with different interests in the broad field of judgment and decision making, all of whom are colleagues and friends of Karl Halvor, to write a chapter for the present volume as a tribute to Karl Halvor's contribution to the field. The book contains 23 chapters (in addition to this introduction) covering a wide variety of different topics in the field. It is eye-catching that almost each and every chapter overlaps, directly or indirectly, with some of Karl Halvor's work. And this is not all, given that he has a second "hobby", hardly represented in the present volume (with the exception of chapter 21), namely the history of psychology, in which he published numerous articles.

The first section on Probability Judgments and Assessments of Uncertainty contains a natural continuation of Karl Halvor's first four articles mentioned above. Indeed, a major interest of Karl Halvor (underlying much of his work on uncertainty) concerned the conceptual meaning of subjective probabilities (e.g., Teigen, 1994). The chapter by Craig Fox and Gülden Ülkümen (chapter 1) discusses the conceptual distinction between aleatory uncertainty (governed by some random processes of nature) and epistemic uncertainty (representing uncertainty regarding knowledge). This distinction, closely related to external vs. internal uncertainty, is also a major theme of chapter 5 by Carl Martin Allwood. His chapter centers on the internal facet of uncertainty and examines people's assessments of their own knowledge or the lack of it.

An important theme in Teigen's work concerns verbal assessments of uncertainty and their relation with numerical probabilities (e.g., Teigen & Brun, 1995, 1999, 2003a, 2003b). Chapter 2 by David Budescu and Tom Wallsten compares their own approach to verbal probabilities with the approach developed by Teigen and Brun.

One of the more robust findings with regard to probability assessments is the so called phenomenon of overconfidence (e.g., Keren, 1991). Chapters 3 and 4 are devoted to that topic: Chapter 3 by Magne Jørgensen examines overconfidence in lay persons' estimation of confidence intervals, a work that was initiated by Jørgensen, Teigen, and Moløkken (2004). Chapter 4 by Dan Zakay and Dida Fleisig
makes an attempt to resolve an empirical inconsistency of what is termed the confidence frequency effect. The essence of this effect is that people are overconfident with regard to single predictions (sometimes referred to as “local confidence”), a phenomenon that disappears when they assess the probability of being correct over a larger set of predictions (sometimes referred to as “global confidence”).

Inconsistencies and paradoxes are indeed inherent in both the normative and descriptive facets of probability judgments and decision making. An intriguing and stimulating example is examined in depth in Peter Ayton’s contribution (chapter 6). It describes a sequential lottery (sampling without replacement) in which five events are associated with a large financial reward and one with death. Given that one is forced to participate, the question is raised as to which position in the sequence (1 to 6) one would choose to be in. Ayton neatly discusses the various considerations involved in such a decision.

To end this section it may be worthwhile to note that uncertainty assessments keep Karl Halvor’s mind busy at all times. Even when he goes to work and waits for the bus he immediately starts to calculate the probability that the bus will be on time, too early or too late. Such thoughts led him to study the issue experimentally and the results are summarized in Teigen and Keren (2007). In that paper, the authors use a scenario concerning Fred who is waiting for the bus and show that, at least in this situation and in contrast to much previous research, participants do not neglect base-rates. To eliminate any doubts, Fred is Karl Halvor’s pseudonym.

The themes of the second section, entitled Naive Theories, Heuristics, and Cognitive Errors, lie at the heart of Karl Halvor’s work. The intricacies underlying human reasoning and decision making and the near impossibility of avoiding some inconsistencies seems to be a major thread behind Karl Halvor’s studies. Indeed, almost all the chapters in this section have some relation to Karl Halvor’s research. Baron’s chapter 7 touches on two central concepts that Karl Halvor has investigated, namely luck and coincidences (Teigen, 1983, 1999, 2005). Much of Karl Halvor’s research and interests lie around what is commonly termed heuristics and cognitive errors. A sample of such cognitive shortcomings are presented and discussed by several authors. Chapter 8 by Nigel Harvey deals with the well known anchoring and adjustment pitfall, chapter 9 by Gaëlle Villejoubert examines the conjunction fallacy, and chapter 10 written by Ola Svenson looks into the time saving bias. Chapter 9 also looks at a common explanation of many cognitive errors according to which they are due to intuitions and are not subject to deliberate analysis. This theme is also the subject of chapter 16 of section 3.

Disregarding the corny issue of whether cognitive errors can be experimentally demonstrated (Cohen, 1981) and the extent to which it is justified to label them faulty, Robin Hogarth in chapter 11 suggests a distinction between what he calls
Introduction

kind and wicked environments. Whereas the former type of environments allows easy learning of judgmental tasks, wicked environments, as the name suggests, contain obstacles that often hinder such learning. Following this view, cognitive errors can best be understood as an interaction between the cognitive system and the relevant environment. Chapter 12 by Tommy Gärling makes an attempt to apply and relate our knowledge of heuristics and biases to anomalies in the stock market.

The last chapter (13) in this section, by Frode Svartdal and Jens Andreas Terum, is devoted to the question of how evaluation of an outcome is influenced by imagining alternative potential outcomes or counterfactual reasoning. Students of judgment and decision making were for long time interested in the underpinnings of counterfactual thinking and its corresponding effect on judgment and choice. Karl was early on intrigued by counterfactual thinking and in particular its interpretation in terms of good or bad luck (e.g., Teigen, 1995, 1998). The present chapter, which in some respects continues previous work by Teigen and his colleagues (e.g., Teigen, Evensen, & Samoilow, 1999; Teigen, Kanten, & Terum, 2011), examines valence evaluations of negative outcomes portrayed as either factual or counterfactual showing the former are consistently rated as more aversive compared with the latter.

The third section, entitled Approaches to Reasoning and Decision Making, consists of three chapters that propose a more global outlook on judgment and choice. The heuristics and biases program initiated by Kahneman and Tversky (Kahneman, Tversky, & Slovic, 1982) triggered much empirical and theoretical research. As Gilovich notes in chapter 16, Karl Halvor has conducted insightful research to explore and understand cognitive errors that are incompatible with the principles of rational thought. Chapters 14 and 15 each propose an overall theoretical framework to account for cognitive errors and the conflict between deliberate and spontaneous ways of reasoning.

Chapter 14 by Lee Roy Beach presents the essentials of his new theoretical framework referred to as the psychology of narrative thought (Beach, 2010), which supposedly replaces his older approach labeled image theory (Beach & Mitchell, 1990). Briefly, the theory assumes that judgment and decision making are carried out by a thought process in the form of construing a narrative. The nature of the narrative and the manner by which it is constructed can account for the ultimate judgment or decision.

A common theme in behavioral decision making and experimental economics concerns potential conflicts between what are referred to as intuitive and deliberate (considered the more rational) modes of reasoning underlying judgment and decision making. Assuming that these two modes are governed by different
processes, Tom Gilovich examines in chapter 16 three different types of conflict arising from discrepancies between the reason and intuition modes of thought. He presents what he terms the matching hypothesis according to which the conflict is resolved by detecting a match between the features of the particular problem at hand and the features they associate with intuitive and rational thought.

Like Beach’s chapter 14, Oswald Huber’s chapter 15 is an attempt to describe the decision processes, albeit his fundamental construct is that of causal mental models. A major idea in this framework is that when evaluating an attractive option which nevertheless may also produce some unwanted side effects, the decision maker will envisage a counter action (termed risk-defusing operator), that will eliminate or mitigate undesired consequences.

The fourth section is devoted to Representation of Options and Choice Behavior. Initiated by the work of Kahneman and Tversky, in particular the frequently cited Asian disease problem (Tversky & Kahneman, 1981), researchers have realized that the manner by which options are described or framed may strongly influence both judgment and choice. Although the statements that “50 % of the task has been completed” or that “50 % of the task remains to be done” are logically equivalent, the two announcements do not necessarily convey the same message (Teigen & Karevold, 2005). Much of Karl Halvor’s recent work contains some ingenious demonstrations of framing effects and an attempt to better understand their effects on judgment and choice (e.g., Halberg & Teigen, 2009; Halberg, Teigen, & Fostervold, 2009; Teigen & Nikolaisen, 2009; Karevold & Teigen, 2010; Teigen, 2010). Chapter 17 by Hilton, Schmeltzer, and Geurts and chapter 18 by Gideon Keren are devoted to framing and are directly or indirectly linked with Karl Halvor’s work.

The initial interest of Karl Halvor in framing effects goes back to his research on the communication and articulation of uncertainty noting that different expressions that formally represent the same level of uncertainty are nevertheless interpreted differently. For instance, the expressions (verbal probabilities) “it is quite uncertain that the treatment will be helpful” and “it is a possibility that the treatment will be helpful” are judged by experimental participants to represent the same probability of a successful treatment (a probability of around .31). However, only a third of the participants interpret “quite uncertain” as conveying an encouraging message compared with 90 % who consider “it is a possibility” as communicating an encouraging message. Hilton et al. (chapter 17) propose that the meanings ascribed to linguistic quantifiers and probability expressions go beyond what they formally denote depending on their relations to other words that belong to the same linguistic domains. The authors show how these relations enable different kinds of reasoning.
Framing effects have important consequences for rational choice theory because of its reliance on the so-called description invariance assumption (e.g., Tversky & Kahneman, 1986). Following this assumption, logically equivalent descriptions of choice options should not affect the preference order among these options. Chapter 18 by Gideon Keren challenges the descriptive validity of this assumption, claiming that description equivalence in real life is frequently based on information or structure similarity rather than on formal logical equivalence.

Not undermining the importance of framing, there are clearly other aspects that influence the choice process. Chapter 19 written by Maya Bar-Hillel examines another important aspect of the choice process, namely the position of the different choice alternatives. For instance, other things being equal, people prefer options in central rather than in marginal peripheral positions. Thus, in the well-known game of “hide or seek” a treasure in one of four linearly ordered locations, 72 and 63 percent of hiders and seekers respectively, chose one of the two middle positions (Rubinstein, Tversky, & Heller, 1997). The importance of location of the choice options in determining the final choice can manifest itself in different ways that are neatly discussed in this chapter.

The last chapter (20) in this section by Henry Montgomery, Per H. Hedberg, and William Montgomery, is based on the concept of psychological connectedness—an unobservable construct which is supposed to represent the self and its connections with the outside world on different facets such as on the temporal dimension (i.e., the bond with the past, present and future), on the social dimension (strength of relationships), and so forth. The chapter first defines and explains the meaning of psychological connectedness and subsequently demonstrates its effect on preferences.

Previous normative theories of judgment and decision making tended to underestimate, or ignore altogether, the affective facet. Behavioral decision making, which attempts to describe how judgments and decisions are actually made, cannot be complete without taking into account the role of emotions and motivation (e.g., Zajonc, 1980). The last three chapters of this book are directly or indirectly associated with affect.

An important and often cited book regarding emotions is Damasio’s (1994) *Descartes’ Error*. A few years later, Wilson (2002) published *Strangers to ourselves: Discovering the adaptive unconscious*. Both authors contrast recent findings with the seventeenth century philosopher Descartes’ “grave mistakes.” In chapter 21, Geir Kirkebøen challenges these authors’ and other psychologists’, including Karl Halvor’s (e.g., Teigen, 1997) misinterpretations of Descartes. Specifically, Kirkebøen argues that contrary to what Wilson (2002) and other claim, Descartes could be considered as the parent of the modern theory of the adaptive unconscious.

Much of the research in behavioral decision making, certainly the heuristics and
biases line of research, has focused on the behavior of the individual. Chapter 22 by Maria Lewicka comprises an exception in that she examines a group bias, specifically collective memories. She examines memory of historical events and demonstrates how such memory is biased by ethnic membership. Analyzing such collective ethnic biases in Central Eastern Europe, she concludes that they can be accounted for by a mixture of motivational reasons and object-driven cognitive heuristics.

The closing chapter (23) by Marcel Zeelenberg highlights once again the importance of the affective facet that has initially been neglected by the founding researchers in the field of judgment and decision making. Zeelenberg claims that traditional models of rational choice have serious limitations when it comes to describing and predicting people’s decision making behavior in daily life. Subsequently, he describes a research program from his own laboratory labeled as “Feeling is for doing”, in which he shows how emotions (assumed to be motivational constructs) serve as signals that lend priority to some alternative options over others.

Consider the following question. A friend of yours is celebrating her birthday and invites you for a party. Naturally you can’t come empty-handed and so you go to the local liquor store, where you are told that there are two offers on sale: A bottle of delicious French wine for $30 or two bottles of a good Italian wine for exactly the same price. What do you buy your friend as a gift? Now suppose you are actually the person who is celebrating her birthday and further assume that you had the choice between the above two gifts. Karl Halvor and his collaborators (Teigen, Olsen, & Solás, 2005) reported the surprising experimental finding that most participants in the role of the gift giver opted for the French bottle, whereas most participants in the role of the gift receiver had a preference for two bottles of Italian wine. Given these unexpected results we are not certain whether Karl Halvor would prefer to receive the current edited book or whether he rather had 23 bottles of French wine, one bottle for each chapter. We decided for the former but based on Karl Halvor’s research he may have preferred the latter. In any event, on behalf of all the authors that contributed a chapter to this volume we wish Karl Halvor many happy returns and further success and delight in his inexorable psychological inquiry.

Gideon Keren, Wibecke Brun, Geir Kirkebøen and Henry Montgomery

ADDENDUM

Shortly before this book went to press, one of the initiators of this project, Wibecke Brun, passed away after a long period of illness. All of us – the contributors, the editors, Karl Halvor Teigen, and everyone who knew her – will miss her tremendously. Let this book be a tribute to Karl Halvor Teigen and the memory of his dear student Wibecke Brun.
REFERENCES

Beach, L.R. (2010). The psychology of narrative thought: How the stories we tell ourselves shape our lives. Bloomington, IN: Xlibris.


